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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/663,253

09/16/2003

Kenneth B. Gilleo

CED 6009

2863

321

7590

10/06/2004

SENNIGER POWERS LEAVITT AND ROEDEL
ONE METROPOLITAN SQUARE
16TH FLOOR
ST LOUIS, MO 63102

EXAMINER

WILLIAMS, ALEXANDER O

ART UNIT

PAPER NUMBER

2826

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/663,253

Applicant(s)

GILLES, KENNETH B.

Examiner

Alexander O Williams

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 July 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/16/03.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

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Serial Number: 10/663253 Attorney's Docket #: CED 6009
Filing Date: 9/16/2003;

Applicant: Gilleo

Examiner: Alexander Williams

Applicant's election of Group I (claims 1 to 17), filed 7/22/04, has been acknowledged.

Applicant's Status Letter filed 9/22/04 has been acknowledged.

Claims 18-24 have been canceled.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the substrate to form a releasable mechanical connection between the circuit device and the substrate in claims 1 and 12, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering

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of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claims 1 to 17 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, it is unclear and confusing to what is meant by and what shows "at least one adhesive body positioned between the integrated circuit device and the substrate to form a mechanical connection between the circuit device and the substrate." How is at least one adhesive body "a mechanical connection?"

In claim 12, it is unclear and confusing to what is meant by and what shows "the substrate to form a releasable mechanical connection between the circuit device and the substrate." Where is this "mechanical connection" shown in the drawings?

Any of claims 1 to 17 not specifically addressed above are rejected as being dependent on one or more of the claims which have been specifically objected to above.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 12 and 14 to 17, **insofar as they can be understood**, are rejected under 35 U.S.C. § 102(e) as being anticipated by Stewart et al. (U.S. Patent Application Publication # 2003/0170450 A1).

12. Stewart et al. (**figures 1 to 13**) specifically **figures 2 and 5A-5E** show an assembly comprising: a substrate **2**, an integrated circuit device **1** adapted to be electrically and mechanically attached to the substrate, electrically conductive

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connecting elements **7** between the device and the substrate that electrically connect the device and the substrate, and at least two adhesive bodies **3** comprising a non-thermosetting material positioned between the integrated circuit device and the substrate to form a releasable mechanical connection **3** between the circuit device and the substrate.

Detail Description Paragraph - DETX (26):

[0070] The shape of the thermoplastic adhesive as applied to the available surfaces and the location of application is also not limited. Examples of the kinds of shapes the thermoplastic adhesive may take as applied to available surfaces and their location are depicted in FIGS. 5A, 5B, 5C, 5D, and 5E. In each of these figures, reference number 1 represents the solder balls on the bottom surface of a connecting substrate of a BGA. In FIG. 5B, the thermoplastic adhesive 3 is adhered to an available surface 2 at a location along all four edges of the connecting substrate perimeter as strips. In FIG. 5C, the thermoplastic adhesive 3 is adhered on available surfaces 2 as strips at a location along three edges of the BGA perimeter. In FIG. 5D, the thermoplastic adhesive 3 is applied on available surfaces at a location along two BGA perimeter edges as strips. In FIG. 5E, the thermoplastic adhesive 3 is applied to available surfaces 2 as squares along each of its four corners, and in FIG. 5A, the thermoplastic adhesive 3 is applied on available surfaces 2 as squares offset from the corners of the connecting substrate, and if desired may be centered along each of the sides of the substrate. Examples of other suitable shapes include dots, ovals, rectangles, waves, stars, sheets, films, spheres, blocks, or preforms.

14. The assembly as set forth in claim 12, Steward et al. show wherein said at least two adhesive bodies **3** are spaced apart to form an open space between the adhesive bodies (see figure 5E).

15. The assembly as set forth in claim 12, Steward et al. show wherein said at least two adhesive bodies **3** are positioned at a periphery of the integrated circuit device (see figure 5E).

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16. The assembly as set forth in claim 12, Steward et al. show wherein said integrated circuit device **1** has corners and the at least two adhesive bodies **3** comprise four adhesive bodies positioned at said corners (**see figure 5E**).

17. The assembly as set forth in claim 12, Steward et al. show wherein said at least two adhesive bodies **3** comprise a thermoplastic polymer (**see figure 5E**).

Detail Description Paragraph - DETX (19):

[0063] The thermoplastic polymer used in the process of the invention, and the thermoplastic polymer of the invention, is an adhesive. By an adhesive is meant a thermoplastic polymer which is capable of bonding by surface attachment to the bottom surface of an organic connecting substrate and to the printed circuit board surface, its cladding, or its solder mask, depending on the type of printed circuit board used, with sufficient strength to remain bonded to both surfaces under gravity loads at ambient conditions. Preferably, the thermoplastic adhesive is non-electrically conducting since it is not used as a conductive adhesive between the solder bumps and the landing pads on a printed circuit board.

Claims 12 and 14 to 16, **insofar as they can be understood**, are rejected under 35 U.S.C. § 102(e) as being anticipated by Park (U.S. Patent # 6,642,626 B2).

12. Park (figures 2 to 11) specifically figure 3C show an assembly comprising: a substrate **200**, an integrated circuit device **210** adapted to be electrically and mechanically attached to the substrate, electrically conductive connecting elements **215** between the device and the substrate that electrically connect the device and the substrate, and at least two adhesive bodies **230** comprising a non-thermosetting material positioned between the integrated circuit device and the substrate to form a releasable mechanical connection between the circuit device and the substrate.

14. The assembly as set forth in claim 12, Park show wherein said at least two adhesive bodies **230** are spaced apart to form an open space between the adhesive bodies.

15. The assembly as set forth in claim 12, Park show wherein said at least two adhesive bodies **230** are positioned at a periphery of the integrated circuit device (**see figure 4**).

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16. The assembly as set forth in claim 12, Park show wherein said integrated circuit device **1** has corners and the at least two adhesive bodies **230** comprise four adhesive bodies **230** positioned at said corners (**see figure 4**).

Initially, and with respect to claims 1, 3, 4 and 13, note that a "product by process" claim is directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); In re Fitzgerald, 205 USPQ 594, 596 (CCPA); In re Marosi et al., 218 USPQ 289 (CAFC); and most recently, In re Thorpe et al., 227 USPQ 964 (CAFC, 1985) all of which make it clear that it is the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that Applicant has burden of proof in such cases as the above case law makes clear.

Claims 1 to 11 and 13, **insofar as they can be understood**, are rejected under 35 U.S.C. § 103(a) as being unpatentable over Stewart et al. (U.S. Patent Application Publication # 2003/0170450 A1).

1. Stewart et al. (figures 1 to 13) specifically figures 2 and 5A-5E show an assembly comprising a substrate **2**, an integrated circuit device **1** adapted to be electrically and mechanically attached to the substrate, electrically conductive connecting elements between the device and the substrate that electrically connect the device and the substrate, and at least one adhesive body **3** positioned between the integrated circuit device and the substrate to form a mechanical connection between the circuit device and the substrate, said at least one adhesive body comprising a nonthermosetting material which, when heated, releases said mechanical connection to allow removal of the circuit device from the substrate.

Detail Description Paragraph - DETX (26):

[0070] The shape of the thermoplastic adhesive as applied to the available surfaces and the location of application is also not limited. Examples of the kinds of shapes the thermoplastic adhesive may take as applied to available surfaces and their location are depicted in FIGS. 5A, 5B, 5C, 5D, and 5E. In

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each of these figures, reference number 1 represents the solder balls on the bottom surface of a connecting substrate of a BGA. In FIG. 5B, the thermoplastic adhesive 3 is adhered to an available surface 2 at a location along all four edges of the connecting substrate perimeter as strips. In FIG. 5C, the thermoplastic adhesive 3 is adhered on available surfaces 2 as strips at a location along three edges of the BGA perimeter. In FIG. 5D, the thermoplastic adhesive 3 is applied on available surfaces at a location along two BGA perimeter edges as strips. In FIG. 5E, the thermoplastic adhesive 3 is applied to available surfaces 2 as squares along each of its four corners, and in FIG. 5A, the thermoplastic adhesive 3 is applied on available surfaces 2 as squares offset from the corners of the connecting substrate, and if desired may be centered along each of the sides of the substrate. Examples of other suitable shapes include dots, ovals, rectangles, waves, stars, sheets, films, spheres, blocks, or preforms.

Detail Description Paragraph - DETX (27):

[0071] The state of the thermoplastic adhesive as applied is also not limited. Instead of applying the thermoplastic adhesive to the surface mount electronic device or the printed circuit board as a solid or a semi-solid, the thermoplastic adhesive may be hot melted and applied in liquid form as a dot, strip, wave, or other desirable shape, and subsequently allowed to cool sufficiently to maintain its form integrity sufficient to avoid dripping or smearing during handling, such as when the surface mounted electronic device is flipped or oriented toward the printed circuit board. However, the shape and state of the thermoplastic adhesive may change at any point from the manufacturing step of the thermoplastic adhesive through the solder reflow step.

Detail Description Paragraph - DETX (28):

[0072] Suitable methods for the application of the thermoplastic adhesive to the available surfaces include any conventional methods for the application of adhesives to surfaces in general. These include the application of a pressure sensitive adhesive to the thermoplastic adhesive, the application of pressure to the thermoplastic adhesive itself, or the application of heat to the printed circuit board, the surface mounted electronic device, and/or to the thermoplastic adhesive in order to soften or tackify the thermoplastic adhesive using convection, forced air, microwave, ultrasonics, irradiation, or any other heating means. When applying heat,

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the solid thermoplastic adhesive may be locally heated or globally heated in an oven at a temperature to soften the thermoplastic adhesive sufficient to adhere to the connecting substrate. The thermoplastic adhesive may be heated first, locally or globally, and laid up or placed on the connecting substrate. Alternatively, the cold thermoplastic adhesive may be laid up or placed on the connecting substrate of a surface mounted electronic device, or on the printed circuit board, followed by heating the surface mounted electronic device or printed circuit board on which is laid the thermoplastic adhesive in an oven at a temperature sufficient to provide adhesion. Instead of an oven, the thermoplastic adhesive may be passed under a stream of hot forced air.

Detail Description Paragraph - DETX (29):

[0073] Alternatively, the printed circuit board or the surface mounted electronic device may be preheated to a temperature sufficient to tackify the thermoplastic adhesive, followed by laying down on its surface a non-tacky thermoplastic adhesive for a time sufficient to allow the thermoplastic adhesive to become tacky and adhere to the surface. The thermoplastic adhesive is heated at least partially by heat transfer from the surface of the printed circuit board or the surface mounted electronic device, and optionally also heated by external heating, globally or locally. Optionally, the thermoplastic adhesive may be pre-heated, to any temperature so long as the adhesive can continue to be handled, before it is laid onto the surface of the printed circuit board or surface mounted electronic device. Optionally, pressure may be applied to the thermoplastic adhesive as it is placed on the printed circuit board or the surface mounted electronic device to increase the surface area contact and secure the formation of a bond to the surface.

Detail Description Paragraph - DETX (30):

[0074] In another method, the thermoplastic adhesive can be formed into pellets or any other desired shape, loaded into a hot melt machine, and dropped or injected as a liquid in any desired shape onto the available surfaces on the connecting substrate or printed circuit board. If a hot melt is applied, however, it is desirable to allow the adhesive to form at least a semi-solid prior to mounting the surface mounted electronic device on the printed circuit board to avoid changing its dimensions and risk smearing or impinging on a landing pad or solder ball.

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2. The assembly as set forth in claim 1, Steward et al. show wherein said non-thermosetting material comprises a thermoplastic polymer.

Detail Description Paragraph - DETX (19):

[0063] The thermoplastic polymer used in the process of the invention, and the thermoplastic polymer of the invention, is an adhesive. By an adhesive is meant a thermoplastic polymer which is capable of bonding by surface attachment to the bottom surface of an organic connecting substrate and to the printed circuit board surface, its cladding, or its solder mask, depending on the type of printed circuit board used, with sufficient strength to remain bonded to both surfaces under gravity loads at ambient conditions. Preferably, the thermoplastic adhesive is non-electrically conducting since it is not used as a conductive adhesive between the solder bumps and the landing pads on a printed circuit board.

3. The assembly as set forth in claim 2, Steward et al. show wherein said thermoplastic polymer 3 has a bonding temperature of at least about 100 degrees Celsius (see **column 9 paragraph [0096] and [0097]**).

4. The assembly as set forth in claim 2, Steward et al. show wherein said thermoplastic polymer has a bonding temperature of less than about 300 degrees Celsius (see **column 9 paragraph [0096] and [0097]**).

5. The assembly as set forth in claim 1, Steward et al. show wherein said at least one adhesive body 3 is positioned at a peripheral edge of the integrated circuit device (see **figure 5B**).

6. The assembly as set forth in claim 5, Steward et al. show wherein said circuit device has corners and the adhesive bodies are located at said corners (see **figure 5B**).

7. The assembly as set forth in claim 1, Steward et al. show wherein said at least one adhesive body has a substantially spherical shape.

Detail Description Paragraph - DETX (26):

[0070] The shape of the thermoplastic adhesive as applied to the available surfaces and the location of application is also not limited. Examples of the kinds of shapes the thermoplastic adhesive may take as applied to available surfaces and their location are depicted in FIGS. 5A, 5B, 5C, 5D, and 5E. In each of these figures, reference number 1 represents the solder balls on the bottom surface of a connecting substrate of a BGA. In FIG. 5B, the thermoplastic adhesive 3 is adhered to an available surface 2 at a location along all four edges of the connecting substrate perimeter as strips. In FIG. 5C, the thermoplastic adhesive 3 is adhered on available surfaces 2 as strips at a location along three edges of the BGA perimeter. In

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FIG. 5D, the thermoplastic adhesive 3 is applied on available surfaces at a location along two BGA perimeter edges as strips. In FIG. 5E, the thermoplastic adhesive 3 is applied to available surfaces 2 as squares along each of its four corners, and in FIG. 5A, the thermoplastic adhesive 3 is applied on available surfaces 2 as squares offset from the corners of the connecting substrate, and if desired may be centered along each of the sides of the substrate. **Examples of other suitable shapes** include dots, ovals, rectangles, waves, stars, sheets, films, **spheres**, blocks, or preforms.

8. The assembly as set forth in claim 1, Steward et al. show wherein said at least one adhesive body comprises four adhesive bodies (**see figure 5B**).

9. The assembly as set forth in claim 1, Steward et al. show wherein said integrated circuit device 1 is a chip package.

10. The assembly as set forth in claim 1, Steward et al. show wherein said integrated circuit device 1 is a multi-chip module.

11. The assembly as set forth in claim 1, Steward et al. show wherein said integrated circuit device 1 has a bottom surface with four corners and said at least one adhesive body 3 is located approximately equidistant from adjacent corners in contact with the bottom surface of the circuit device (**see figure 5A-5E**).

13. The assembly as set forth in claim 12, Steward et al. show wherein said releasable mechanical connection 3 is released by heating said adhesive bodies.

As to the grounds of rejection under section 103, see MPEP § 2113.

Claims 1, 3 to 11 and 13, **insofar as they can be understood**, are rejected under 35 U.S.C. § 103(a) as being unpatentable over Park (U.S. Patent # 6,642,626 B2).

1. Park (figures 2 to 11) specifically figure 3C show an assembly comprising a substrate **200**, an integrated circuit device **210** adapted to be electrically and mechanically attached to the substrate, electrically conductive connecting elements **215** between the device and the substrate that electrically connect the device and the substrate, and at least one adhesive body **230** positioned between the integrated circuit device and the substrate to form a mechanical connection **230** between the circuit device and the substrate, said at least one adhesive body comprising a non-

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thermosetting material which, when heated, releases said mechanical connection to allow removal of the circuit device from the substrate.

5. The assembly as set forth in claim 1, Park show wherein said at least one adhesive body **230** is positioned at a peripheral edge of the integrated circuit device **210** (**see figure 4**).

6. The assembly as set forth in claim 5, Park show wherein said circuit device has corners and the adhesive bodies **230** are located at said corners (**see figure 4**).

7. The assembly as set forth in claim 1, Park show wherein said at least one adhesive body **230** has a substantially spherical shape (**see figure 3D**).

8. The assembly as set forth in claim 1, Park show wherein said at least one adhesive body **230** comprises four adhesive bodies (**see figure 4**).

9. The assembly as set forth in claim 1, Park show wherein said integrated circuit device **210** is a chip package.

10. The assembly as set forth in claim 1, Park show wherein said integrated circuit device **210** is a multi-chip module.

11. The assembly as set forth in claim 1, Park show wherein said integrated circuit device **210** has a bottom surface with four corners and said at least one adhesive body **230** is located approximately equidistant from adjacent corners in contact with the bottom surface of the circuit device (**see figure 4**).

13. The assembly as set forth in claim 12, Park show wherein said releasable mechanical connection is released by heating said adhesive bodies.

As to the grounds of rejection under section 103, see MPEP § 2113.

Claims 2 and 17, **insofar as they can be understood**, are rejected under 35 U.S.C. § 103(a) as being unpatentable over Park (U.S. Patent # 6,642,626 B2) in view of Stewart et al. (U.S. Patent Application Publication # 2003/0170450 A1).

Park show the claimed invention as detailed above, but fail to explicitly show the at least two adhesive bodies comprise a thermoplastic polymer. However, Park does show the adhesive bodies are polymer.

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Stewart et al. is cited for show an attachment of surface mount devices to printed circuit boards using a thermoplastic adhesive. Specifically, Steward et al. (figures 1 to 13) specifically figures 2 and 5A-5E show an assembly comprising a substrate **2**, an integrated circuit device **1** adapted to be electrically and mechanically attached to the substrate, electrically conductive connecting elements between the device and the substrate that electrically connect the device and the substrate, and at least one adhesive body **3** positioned between the integrated circuit device and the substrate to form a mechanical connection between the circuit device and the substrate, said at least one adhesive body comprising a nonthermosetting material which, when heated, releases said mechanical connection to allow removal of the circuit device from the substrate, wherein said at least two adhesive bodies comprise a thermoplastic polymer for the purpose of a non conductive connection.

Therefore, it would have been obvious to one of ordinary skill in the art to use Stewart et al.'s thermoplastic polymer to modify Park's polymer for the purpose of a non conductive connection.

The listed references are cited as of interest to this application, but not applied at this time.

Field of Search	Date
U.S. Class and subclass: 257/778,734,737,738,787,788 428/343,355 R,347	10/4/04
Other Documentation: foreign patents and literature in 257/778,734,737,738,787,788 428/343,355 R,347	10/3/04
Electronic data base(s): U.S. Patents EAST	10/3/04


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander O Williams whose telephone number is (571) 272 1924. The examiner can normally be reached on M-F 6:30AM - 7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272 1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AOW
10/3/04



Alexander O Williams
Primary Examiner
Art Unit 2826